

**AMERICAN**  
**JOURNAL**  
OF  
  
DRAPER  
**PHOTOGRAPHY**  
PUBLISHED  
BY  
**THOS. H. M'COLLIN & CO.**  
685 ARCH ST.  
**PHILADELPHIA**

Published Monthly, at \$1.00 per Year, in Advance. Single Copies, 10 Cts.

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# AMERICAN JOURNAL OF PHOTOGRAPHY.

Published by THOS. H. McCOLLIN & CO.

VOL. 8.

PHILADELPHIA, NOVEMBER, 1887.

NO. 11

AMERICAN  
*JOURNAL OF PHOTOGRAPHY*,  
PUBLISHED MONTHLY.  
\$1.00 per Annum, in Advance.

## Photographing Snow and Ice.

BY ELLERSLIE WALLACE.

THE season is fast approaching when the majority of photographers either put away their cameras entirely, or devote themselves to indoor work. This we feel to be a mistake, for not only does nature present herself in a brilliant and attractive guise during winter, but the fact of the landscape being nearly if not quite monochromatic in character renders it peculiarly well adapted to the camera.

It will sometimes happen that the landscape when bare of foliage, and no snow on the ground, will be attractive enough to photograph; this would be true of such places as cannot be very distinctly seen in summer owing to the luxuriance of the foliage, and particularly so of buildings closely hemmed in by trees. But laying this aside as almost self-evident, we ask those of our readers who have never attempted out-door work in winter, not to let the coming season pass by without experimenting a little in snow and ice photography.

The outfit required will be as usual, excepting that even greater precautions

must be taken against stray light gaining access to the film. Where the light is reflected from masses of snow or ice, so brilliant that the eye cannot bear it, it is plain that everything must be done to keep the image in the camera pure, not allowing reflections or false lights from the woodwork or brasswork to reach the plate. If a haze or sheen be observed while focusing, it will be well to examine the lens, stops, and whole interior of the camera before exposing the plate, and extra care must be taken when the door of the holder is drawn so that no light gets through the slot. Many a plate might be saved from fog if the focusing cloth was thrown over the back of the camera while the door is being drawn. We have sometimes heard it objected to this, that the cloth might shake the tripod or throw the camera out of position, to which we can only answer that with things in such a rickety condition no good work ought to be expected.

The two principal things upon which success in photographing landscapes with snow and ice will depend, are, the lighting of the view, and the proper timing of the plate. To obtain a good negative of—let us say—the ice-bridge at Niagara, the very first step would be to see to the angle at which the light struck the prominent masses of ice, and the amount of shadow cast by them upon the more even surfaces. We should look carefully to see that these prominences were really



made to relieve themselves against the shadows or other parts, and did not merely lap into one another in a tame manner. It might very well happen, however, that while such lighting gave effective relief and picturesque quality to the view, the relative contrast between the high lights and deep shadows would be so excessive that no plate could render it without great solarization on the one hand or equally great under-timing on the other. The proper thing to do here would be to wait for a somewhat overcast day, and *not* attempt to work it out by the plate by doctoring the developer and relying on "latitude of exposure."

Snow and ice subjects, like landscapes in general, are more interesting when the sun shines upon them. But this is not equivalent to saying that no beauty can be had without the sun. Any observant person will remember how beautiful the landscape is on dark winter days—so dark that the gas has to be lighted indoors—when the snow lies closely packed just ready to melt. The trees are often more heavily loaded at these times, there being no sun to melt the snow away. The sky at such times will often not be uniformly dark, but there will be shifting light patches so strong as to be a strain on the eye if looked at steadily. We have seen very effective pictures made on just such days as these.

Ice alone, such as large icicles hanging from rocks, or trees encased in ice, as happens after what are known as "freezing rains," will also be well worth the photographer's attention. Nothing can be more interesting than a fine tree with each little twig enveloped in its transparent coating, and relieving itself sharply against the sky or other suitable background.

Those whose travels with the camera take them into regions where there are snow-clad mountains and glaciers, will

probably admit that such subjects are most grand and inspiring. They will notice that there are the greatest fluctuations in the light and in the sky, and that upon these two conditions will depend the distinctness and brilliancy of the photographic results as well as the effective view to the eye. All that we have said concerning the importance of proper lighting will be still more to be observed here; a view taken of some snow-covered peak with a gray, dull sky behind it would be a wretched failure; so would views of extensive fields of ice and snow in the glare of full sun-light without shadow to relieve them; so would masses of rock and trees when rising from a brilliantly lighted snow-plain if made in too strong a light, *i. e.*, one that would overdo the lights before the shadows could impress themselves. No possible modifications of developers could be expected to do that which is the special function of the light itself, and as we have already said, no doctoring of solutions and "latitude of exposure" can ever bring a first-class result out of an improperly timed plate.

We often wish that this term *latitude of exposure* had never been used in photography, for the carelessness in exact timing of the plate which comes from such a saying, is at the bottom of much of the faulty work seen now-a-days.

The combinations of snow and ice in landscape are of course as varied as landscape itself. We have often wondered, however, that those who devote themselves to the scientific rather than to the pictorial part of Photography do not attempt to take, for instance, freshly fallen snow-flakes. We have seen very good pictures of large hail-stones, and now that we can work out-doors in any temperature without fear of the films freezing, we suggest the photographing of the snow crystals as a pleasing novelty. The fresh-fallen flake might be caught on



a piece of black velvet and the crystals separated with a needle, under a magnifier.

In concluding, we feel it our duty to advise all our readers who take up this work, to shield their eyes from the intense glare by means of smoke-colored eye-glasses. Accurate focusing is an impossibility when the eyes are blinded with the intense reflections from snow or ice. The focusing cloth should be always kept well tucked up under the chin to keep the light off from below. The focusing may be done with a large stop or with full aperture, and a smaller one inserted afterwards.

#### On Composition in Landscape.

BY JOHN BARTLETT.

The pleasure the eye derives from beholding the assemblage of objects in nature, is, in a great measure, due to perspective. It gives a variety to regular forms, while it confers regularity upon things which are themselves irregular.

Before the laws of perspective were known, we do indeed find some beautiful examples of combination of lines and forms, but more frequently glaring mistakes, all of which tends to prove that success, without a knowledge of the rules, was either a lucky chance or the result of very close copying of nature.

The photographer may imagine that there is no necessity for his understanding the laws of perspective since the lens does the work for him, but to tell the truth, the lens is not always correct. We know how some lenses, which have a very short focus, make a building of a gigantic size, which is really quite small, and high mountains sometimes like mole hills; so it is well that the photographer should understand something about perspective; but do not fear, we are not go-

ing to give it to you now, but merely to show you that it is valuable to know when your perspective is correct, that is, when the lens you have is of such good quality that it represents the objects just as they appear to an artist who is correct in his perspective.

The bad perspective produced by a too short focus lens, is more apparent in the figures which you may introduce in your scene.

You may think their position and relative size correct, but unless your eye is educated, or you have the means of verifying their dimensions, you will go on repeating your error until some kind friend convinces you of it. Figures in landscapes are great additions to it, but they had better be left out than put in improperly.

Even if you have a good long focus lens, or one of the high priced kind which is not so long focused, yet has all the virtues of the long ones, you may make your landscape look queer by the height of figures above or below the horizon line.

With the same figure at the same distance you may raise or lower the landscape in vertical height. In one case it may form a beautiful picture, in another a ridiculous one. If the horizon is too much depressed, the figure, in its relative greatness, is apt to look as if it were despising the scene, like Gulliver in Lilliput; if the horizon line is too high, we have Gulliver transported to Brobdingnag. The height of the horizon depends upon the height at which we place our tripod. We generally place the camera too high and bring the horizon up to the neck of the figure. Artists seek a lower level; they generally make their sketches seated, while photographers stand up.

The great improvement in a landscape taken with the tripod legs spread out so as to bring the camera to the artist's level, will convince any sceptic.

The position to be occupied by the figures is a matter of taste, that is, no rules can be laid down; they must be in harmony with the subject. Their size will depend upon the intentions you have of making either them or the scene itself the dominant idea in your picture.

Rustic subjects compose best in landscape: high hats and the latest styles do look a little out of place: old people and children are the most effective. If you can catch your figures in an unconscious moment, it is all the better.

Animals, especially sheep and cows add much to the beauty of landscape composition. They show admirably what might be called the anatomy of the land, the gentle slopes and elevations of the soil; and by taking positions which are most convenient for the great object of their lives, grazing, make most beautiful groupings and contribute to the unity of the picture.

By all means get cows in your rural scenes, and if possible have some standing in the brook.

Rocks, trees, mountains, meadows, streams and cows are the features of landscape, but the smile, to carry out the metaphor, is from above—we mean the sky.

In a painting, the sky is of paramount importance—a bad sky means a bad picture. We all have heard of Turner's skies, though we all may not have seen them. The photographer is too apt to neglect the sky in his view; true its intense brightness burns it out on the sensitive film, and the beautiful, light, fleecy forms we see against the clear azure often fail to show their loveliness even when taken with the most rapid shutter. Still, it is within the reach of the photographer to secure by means of sky shades, etc., many beautiful cloud subjects in connection with the landscape; at least there is no excuse for the gross neglect.

We would be glad to see photographs of skies as common at our exhibitions as other subjects.

Printing in skies is more frequently resorted to, but too often they are out of joint with the scene, too obtrusive. The photographer will sometimes attach cloud masses, taken with an almost vertical sun, to a scene in which the lengthy shadows, betoken either evening or early morning. Sometimes, for variety, he will put them in upside down. In most cases they come forward too prominently, and take away whatever interest there may be in the landscape itself.

The two sides of a landscape should not balance each other; there should be a small mass and a large mass. The interest probably should be greater in the small side, but the two masses should not be divorced from one another, there must be some connecting link. For instance, suppose we had in a picture, towards the left, a mill, with trees, and a bridge leading over towards the right of the view, and suppose we call the mill and surroundings the large mass; now, the eye naturally runs along the bridge, and if it finds nothing at the terminus, it is disappointed, and strolls about hopelessly or returns dissatisfied to the mill. Let us therefore introduce a barge with its cargo, moored up to the terminus of the bridge; and we have two parts of the picture, the barge forming the little mass, in which our interest is perhaps centered. We can increase our pleasure and add greatly to the unity of the subject, by simply placing a cart and horse upon the bridge, indicating that it is conveying the cargo of the vessel to the mill.

A scene evenly lighted all over is not as beautiful as one in which the highest light is concentrated at a single point, but it is not always possible to get such subjects directly from nature. We should, however, obtain the nearest to it we can.

With the camera directed towards the light, we shall be more successful than by following the old maxim of photographers to keep the light to our back.

What glorious results are obtained at sunset, or when the sun is just off the lens, or even when it is shining right in it—from behind clouds, so it does not fog the plate.

Some of the finest effects are had by interposing the sail of a boat between the sun and the camera. The play of light upon the water and the graceful and varied forms of the vessels, together with the reflections and the strong effect of dark against light, make some of the most strikingly artistic groupings produced by photography.

One of the most difficult things about selection in a landscape, is the disposal of the number of objects which present themselves. The fewer the elements in a landscape, the easier is it managed, and we should be careful how we introduce things; there is generally enough in nature to occupy our attention.

There are three things first to be looked to before we set about the utilization of the details; our foreground, our middle distance, our extreme distance.

The first gives force to the scene, the second variety; the third, we might say poetry or sentiment.

If we leave out the foreground, the picture is weak, there is no place for the eye to start from; it likes to dwell first on the detail of the near objects before it wanders off on its delightful excursion.

If the extreme distance is omitted, the picture has too much of a shut-in look. If it is only a little peep in between the hills of the middle ground, it will suffice.

We cannot always get this distance in photographs, but we should never neglect an opportunity. The foreground may sometimes be made more interesting by forcible introduction of some object, but

it should always have the accidental look of nature.

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### The Vagaries of Development.

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IF one were to judge from the assurance of the elementary books on photography, the conclusion would speedily be reached that development is a very simple operation.

The formulæ, whose name is legion, generally wind up with the consolation—"If the plate has been over timed, add a few drops of a ten per cent. solution of Bromide of Potassium to the developer; if underexposed, a few drops of a very dilute solution of Hyposulphite of Soda, etc."

The amateur is at once possessed with the belief that he cannot help going right. Under such a chart development looks like plain sailing, but he very soon discovers that there are snags and even shallows in the course, over which the ten per cent. or the very dilute solution will not carry his plate. The plate maker now generally comes in for a big share of the blame, and that certain emulsion is avoided.

Proper development is in reality of greater influence in determining the good qualities of a negative than correct exposure, as regards time, inasmuch as a plate properly timed may by improper development be entirely spoiled, whilst an improperly timed plate, may, by judicious management be made to approximate a well-exposed negative. No stereotyped formulæ can be laid down for successful development. Whatever good results photographers may achieve by their special methods of strong or weak development, it is unwise to think that the plan is applicable to all cases.

We truly believe in the excellent results obtained by pet formulæ, but we as truly believe that success is not attributable to

the method, but to the proper adaptation of the development to the peculiar character of the subject, and the conditions under which the exposure has been made.

Photographers, after having constructed their studios and studied their light, reduce the conditions under which they work to a certain degree of uniformity. Experience teaches them that a certain procedure in development produces the most favorable results, then, forgetting the pains by which their knowledge was gained, they imagine they have discovered the only effectual method for all cases under the sun. They fail to appreciate the fact that should they move their quarters so as to change the conditions of illumination, or should the character of the subjects they are accustomed to treat vary, there would be a corresponding change in the method of development demanded to obtain equally good results.

It is of the utmost importance to know the character of the subject photographed, indeed more so than the exact time of exposure, yet how often are plates handed over to the assistant, without any data, or reserved for development till the close of the day when all knowledge of the subjects is faded from the memory. If there were no uniformity of conditions, varying but little from day to day, the results would very soon tell.

We know nothing of the wonderful action of light in so impressing the sensitive plate as to produce such a change in the molecules of the silver salt that they obey the summons of the developer, and arrange themselves in the formation of the image, but we do know that a reducing action is produced by the agency of the developer.

M. Carey Lea has investigated the action of weak and strong development upon the latent image, and has applied his discoveries to the practical purposes of the art for the production of harmonious

negatives. He has shown that the soluble silver salt passes into an insoluble condition and is deposited or precipitated. The slower therefore, according to chemistry, a precipitation is, or as we would say, the weaker the developer in accelerator the more time the particles have to build up upon the parts which have been the strongest impressed by the agency of the light, whilst those portions that have been only slightly impressed, do not receive a just share of the bounty.

Now let us take a plate which has been undertimed. We know it has received in the high lights the maximum of illumination, whilst the shadows have received the minimum. When, therefore, a weak developer is applied to the plate, the little particles have ample time to select their quarters, and therefore take hold upon the strongly impressed parts and almost entirely desert the shadows.

The result is a harsh and violent negative with excessive contrasts. There are no gradations, merely glaring high lights and dense shadows without detail. If we look through the negative, we shall find that the shadows are clear glass and the high lights very opaque.

If the same exposed plate had been treated to a strong developer, instead of the weak one, what would have been the result? A rapid deposit of the particles. They would not have had time to seek out only the richly endowed parts, but some would have found their way to the poorer quarters where the light had not been so bountiful: the shadows just like a besieging army suddenly let within the gates of a city; a great number of the soldiers would find their way to the finest quarters and the most accessible places, but in the hurly-burly, the insurging crowd would scatter and be forced in every direction, so that one would meet with soldiers at every turn.

Hence, in the undertimed plate, a

strong development is recommended.

If a strong developer were applied to an overtuned plate, the uniformity of the distribution of the particles would be such that we would have a gray flat negative. The shadows would be too much enriched at the expense of high lights. The invaders, as it were, would rush in too precipitately. Strong development, therefore, properly subordinated, gives brilliancy and contrast, weak development, properly subordinated, detail and softness.

The rapid deposition of the particles in strong development is an explanation of the phenomenon of fog from overtime. The rush of the particles is such that they have no time to respond to the summons of the impressed image—they quarter themselves anywhere and everywhere.

Now if we understand the general action of the developer we may make application of the principles. We shall find that the method to be followed in any case really depends upon the character of the subject, that is, the relative portion of illumination it receives in high lights and shadows.

Suppose we have a subject in which there is a good deal of white drapery, as, for instance, a lady in a white dress. If we apply a developer in which the accelerator, the potash or soda, or the iron is in excess, in the rapid inrush the delicate shadows will all be clogged up, but if we apply a developer in which the accelerator is controlled, the high lights will receive the allopathic dose as they should, the shadows the homeopathic. The particles will have time to select more and go where they find the best lodging, and the shadows will take what is left.

M. Carey Lea, as we have said, was the first to point out the fact that a strong developer tends to produce detail in the shadows, whilst a weak developer tends to perfect detail in the high lights.

Let us suppose we have a mass of black drapery, or those colors which photograph as black, if we should follow the stereotyped formulæ what would be the result? If we should believe, for instance, that slow development is the only proper method, we would find that the particles would have time to accumulate only on the better impressed parts, and the poorly endowed portions would receive nothing. We would have in the shadows nothing but the clear glass, showing that the humored particles had time to despise the poor quarters; but with a strong developer the want of impression is compensated by the rapidity of precipitation, and the detail in the dark shadows is brought out. The result is a modulation which is pleasing. Let us see how these principles may be called into service in portraiture.

Suppose we have a sitter whose complexion is fair but whose hair is black—or what is the same thing, flaxen; or one with florid complexion and gray or white beard or hair. Here we have violent contrast. How shall we treat it?

Remembering the principles, we would give a rather full exposure to secure an impression from the dark non-actinic portions, and then apply a rather strong developer, unrestrained, to overcome the contrast.

We say *rather* in both the exposure and development, because we recollect that strong development with overtime produces a tendency to flatness; we should not reduce the contrast so as to produce flatness. In other words do not be extreme. *It must be confessed that judgment must be used in development; there is truly no royal road to it—however much the instruction books may seek to level it.* Again our subject may be naturally flat, we mean photographically flat, that is have red or black hair and florid complexion, or white or gray hair and pale



face, or black hair and a brunette or bronze complexion.

The subjects in which the complexion and hair are both non-actinic, the not very impressible subjects (again photographically speaking), will necessarily require long exposure. The light-haired and pale-faced subject will need shorter time to impress itself, if it desires to appear brilliant. Both however, will require a slow development or they will be flat stale and unprofitable, we assure you very much of the latter quality; (this is in a pecuniary sense). It remains now to show how best to accommodate great contrasts of drapery and dress with the face.

Suppose there is contrast between the hair and complexion of the sitter, black hair and pale face, or red face and gray hair, and suppose such a subject is pleased to dress in a very actinic apparel, as for instance blue or white, how shall the photographer proceed?

In such a case we confess we would rather plead that this paper is already too long, and we have scruples against wearying the patient reader. With ordinary plates in such extreme cases good results are impossible. We would first of all try to persuade the sitter to change the garment for one less actinic in color, but if compelled to make the exposure, we would employ an orthochromatic plate and run the risk of fog.

### The Origin and Technology of Photographic Chemicals.

BY FRANK H. ROSENGARTEN.

#### *Seventh Paper.—Sulphur and its compounds.*

We have treated of the silver salts, haloids, alkalies and their simple salts in previous numbers, have spoken of the use of sulphuric acid incidentally, and now propose to traverse the more interesting sources of sulphur and its compounds.

This important substance is found native chiefly in volcanic districts, either crystallized or amorphous. The Island of Sicily and the Solfarata near Naples, are the principal sources of supply; there are also large deposits in Spain, around Hecla in Iceland, in Louisiana and in various gypsum beds in Europe. The well-known mineral, iron pyrites, contains about 54 per cent. of sulphur, though generally contaminated with arsenic. Although commonly described as a mineral body, sulphur enters into the composition of certain animal and vegetable substances. Associated with nitrogen, it is a constituent of albumen, fibrin and casein; it is found in skin, hair, horn, nail and feathers, in gluten and certain essential oils, as those of mustard and horseradish. In photography it occurs in sulphuric acid, sulphite and hypo-sulphite of soda, in alum and other essential reagents. In 1881, there were 105,000 tons of sulphur imported into the United States, and doubtless the quantities have increased immensely since that time. The sort imported comes either as a yellow powder called "crude," or in "rolls," or in an impure state called "horse brimstone." To obtain these varieties, the sulphur earths are placed in earthen pots, set in oblong furnaces of brickwork. From the upper and lateral portion of these pots, a tube extends, joined to another pot outside of the furnace, perforated near the bottom, to permit the melted sulphur to flow into vessels containing water. Fire being applied to the furnaces, the sulphur rises in vapor, leaving the impurities behind, and being condensed in the cooler, flows from the perforated bottom into the vessel containing the water. This constitutes the crude sulphur of commerce, containing about one-twelfth of its weight of earthy matter. To purify this, it is melted in cast iron vessels, the impurities subside, and the purer sulphur is dipped out



and poured into cylindrical wooden moulds, producing the well-known "roll" sulphur. This purification is very incomplete, and generates loss, so more complicated furnaces are employed, by use of which a very commercially pure sulphur called "sublimed" or "flowers of sulphur" is obtained.

Sulphur can be distilled from pyrites but as the expense is so great, the use of this mineral is confined to the production of oil of vitriol, which will be described later

Large quantities of sulphur of very good quality are obtained from the residues produced in the manufacture of soda in England, France, Belgium and Germany. Sulphur is a non-metallic element, susceptible of several conditions. In its ordinary state it is a brittle solid, of a pale yellow color, permanent in the air and exhibiting a crystalline texture and shining fracture. It has a slight taste and a perceptible smell when rubbed. Pure sulphur melts at 238° Fahrenheit. If heated above its melting point, it undergoes, in proportion to the heat applied, a progressive change, which will cause it to solidify at a temperature lower than that at which it melted at first, and if it be re-melted it will be found to have a higher melting point than before. Heated to 392° it has a deep brown color and is so viscid it cannot be poured from the vessel in which it is melted; heated still higher it resumes a state of fluidity and at 839° Fahr. it boils, forming a yellow vapor, readily distilled. If melted sulphur, heated above 392° Fahr., is suddenly cooled by being poured into water, it becomes a reddish brown plastic mass, with alteration of properties, and can be employed in taking impressions of medals etc. It will remain of the reddish brown color but in a few days resumes its hard state. Sulphur takes fire at about 300° and burns with a blue flame, combining with the oxygen

of the air, and giving rise to sulphurous oxide. The combinations of sulphur are numerous, and are among the most powerful of chemical agents.

It has been said "that any country showing the highest type of civilization, necessarily produces oil of vitriol," and we see this exemplified in the absence of such an industry in Turkey, Greece, South America, China and those portions of the world where antique ideas prevail. Over 850,000 tons are made annually in England alone and proportionate quantities in France, Germany, Belgium and the United States. In this country Sicilian sulphur is the main source; in England nearly always, the use of pyrites prevails. The great mines of the Tharsus Mining Company in Spain have hundreds of acres of surface pyrites, very rich in copper, and the residual oxides pay for the mining and transportation by the amount of metallic copper of the purest sort they yield.

The pyrites mineral is placed in medium sized lumps on the grates of furnaces, which have previously been heated to redness, and soon begin to ignite, and once in a state of ignition, fresh charges are added and the portions burned out removed. This burning is really the oxidation of the sulphur in the pyrites into sulphurous acid by means of combination with the oxygen of the air. This acid is a volatile gas, and being forced into great lead chambers, mixed with more air, steam and fumes of nitric acid is converted into sulphuric acid.

As soon as sulphuric acid forms, it congeals to a liquid and falls in spray to the bottom of the chamber, forming what is technically called "chamber acid," as containing about 60 per cent. of sulphuric acid. This chamber acid is heated in platinum vessels and boiled until the excess of water is expelled, when it is drawn off, cooled, and becomes "oil of vitriol" or

the acid of commerce. The acid made from sulphur is burned on hearths in a somewhat similar manner to the pyrites, and the vapors, driven into great leaden chambers as we have seen above, converted into "oil of vitriol". Thus made, the acid of commerce invariably contains a distinct quantity of sulphate of lead, from pyrites, arsenic and other impurities. To obtain pure acid, the oil of vitriol must be very cautiously distilled—a precarious operation, owing to the high boiling point and from danger of concussions of the boiling liquid, which is very heavy, easily breaking the glass retort, unless special precautions are taken. Sulphuric acid is a dense, colorless, inodorous liquid, of an oily appearance, and strongly corrosive. It unites with water in all proportions, but much heat is evolved on the mixture of the two fluids. At a sp. gr. of 1.78 it deposits crystals, at the freezing point of water. It acts powerfully on organic substances, developing charcoal and turning them black. A piece of cork will be quickly acted on.

In photographic work only pure sulphuric acid should be used, as the impurities found in oil of vitriol are so numerous and of such character as to cause many troubles.

In all the industries this acid has a part to play either directly or indirectly; in agriculture it shares its beneficent powers as a fertilizer, in iron working, paper making and in the preparation of textile fabrics, dyeing and innumerable other branches, it creeps in, either as an acid directly, or in combinations of the most varied characters. But how difficult it is to tell the marvelous story of this common yet most necessary reagent, in so limited a space.

The Public Ledger of Philadelphia has an entire column devoted to Photography. It is well edited and contains points of interest to professional or amateur.

#### Open Air Portraits.

We are told by one of the contemporary biographers of Queen Elizabeth that she desired to be painted in an "*an open garden light.*"

None of the painters of her time could paint objects as seen in the open air, and so they painted her without shadow at all, doubtless not at all to her satisfaction. Could she have lived later, Gainsborough would have delighted her; he expresses to perfection the effect of open daylight.

Out-door portraiture has many votaries amongst the amateurs, and indeed some of their results have a freshness and naturalness which ought to put to shame some professional studio work.

A glass house, really, is only a protection against the inclemency of the weather, and the amateur who aspires to portraiture need not grieve because he has only the broad expanse of heaven for his skylight.

By selecting a proper situation, and by good judgment, not only good results may be secured, but even beautiful artistic work, rich in gradations of shade.

It is necessary first of all to know when a face is well lighted. Unless one can judge from the appearance on the ground glass screen, there is no hope for him. The beautiful modulations of color in the human face mask the abrupt shadows to an inexperienced eye. One must divorce color from the object and look only for the "*values*,"—the relative tone or darkness of one part with another.

A corner where two walls come together is to be selected. Walls running northeast and northwest, respectively, are generally preferred, but it is immaterial, so we have a contrast of light and shade. There should be a dominant light coming in at any angle not less than 45°. The top light should be shut off as much as possible by means of a canopy or roof; generally enough reflection will be ob-

tained from the top, if not too low. If any is needed, white paper or muslin may be stretched or tacked to the roof. Too much top light gives harsh, heavy shadows under the eyes.

The background may be either the wall, or, better, a frame of paper, or muslin of the suitable color. Light terracotta paper is cheap, and makes excellent grounds if secured of the proper width. Plain backgrounds are the most artistic; they should be placed at such an angle as to secure a nice gradation from high light to deep shadow.

The face should be directed towards the principal light. If the darker side needs lighting up, use a large screen, not too near the sitter.

Of course it is understood that the principal light is not direct sunlight.

The best time of day to take out-door portraits is in the morning or evening, when the sun is above the horizon, so as to brightly illuminate the sky, but itself hid behind high buildings. If we are fortunate enough to have yards, the out shed which is usually attached to the kitchen, closed on two sides and open on the other two, will be found a most excellent place. Supposing the sun to be in the southwest, the background-wall north, and the shadowed side east, if we place our camera at the south or southwest, nearly in the position the sun is in, we shall have the greater portion of the face in full light and the less portion in shadow, which arrangement makes the most pleasing portraits, notwithstanding studio-workers delight to light up the short side in preference to the other. As soon as the sun has sunk behind the houses, that is, as soon as it is off the background and the sitter, the photographer may begin work and continue until the light becomes too feeble.

When the conditions we have mentioned cannot be obtained, and we are forced

to take portraits, truly in the open air under the broad canopy of the sky, we should try to imitate the arrangements as much as possible, that is, build up a structure. The back wall should be rather high and of a dark ground, to prevent diffuse light from entering the lens. The background, of course, can be of any color preferred. The frame work of the enclosure should be constructed in such a manner that it may be placed in a position to secure a brightly lighted side and a shadowed side. It should also be of sufficient firmness to inspire your sitter with confidence in its stability, should he feel disposed to lean his head or rest his body upon it. The direct sun should be shut off by screens of sufficient thickness to give a softness to the light, and as the face is directed towards the light, there should be some dark object, not necessarily large but of sufficient size for the eyes to rest upon, instead of being forced to stare at the direct light of the white screen. Blue and other light colored eyes require special care in this particular.

The great danger in this latter kind of out-door pictures is the entrance in the lens of bright light reflected from objects. If any enters, there is a great danger of fog. A large cone about a foot long, blacked inside, attached to the lens has been recommended. It is useful if you use a pneumatic shutter, but inconvenient if you are obliged to take the cap off and on in making your exposures.—J. B.

#### A Good Word for the Photograph.

"Good photographs are always instructive to the artist; the drawing is so beautifully correct in details. After turning over many, if they are well selected, it feels almost impossible to look at sketches, except by the very first masters."—TRISTRAM J. ELLIS, *Sketching from Nature*.

### **The Lens not Always to Blame.**

We occasionally hear a good deal, especially from painters, of the evils of distortion in lenses. Often they are in the right, but sometimes the lens is right, and they are wrong.

It is not everybody that can justly boast of powers of correct observation, or who properly understands the laws of perspective, especially when applied to the human body. Feet are generally much larger in proportion to the figure than most people imagine, and we have known photographs to be criticised for the disproportion of the hands, and the poor photographer put out of heart with his high priced lens, when in reality the size was rigidly correct, with relation to the other parts of the figure. How many people will believe what is the actual size of the foot or hand of a well-proportioned person.

Short focus lenses generally come in for a Benjamin share of the condemnation; rapidity is the great desire of the amateur, the shorter the focal length, the greater the angle taken in by the plate; also, the amount of light admitted will be greater, and so the time of exposure will be greatly reduced. The cheap outfits are provided with short focus single lenses, and of course when only four or five inches, the distortion is considerable; but this is no reason why all short focus lenses should be discarded. There are compound lenses—of course expensive—with comparatively short foci, which give a picture corresponding to that of a long focus single lens. There are often great advantages to be had from the use of short focus lenses. Of course in choosing a lens the purpose for which it is required should be taken into consideration. In a portrait lens, for instance, we look for properties which would be an objection if presented by a landscape lens.

The objects to be photographed by the

portrait lens, are within a few feet of the position of the camera, and the parts which are in different planes should have sharpness upon the plate without distortion. Hence we cannot use a single lens with good effect for portrait work.

In landscape, the distortion of single lenses would pass unnoticed provided there was no architectural subject delineated, but want of focus in the immediate foreground, would be detected at once.

There are certain advantages gained by using a short focus lens for landscape; more of the foreground can be included in the picture without any blurring, and the scene really looks more like an artist's sketch than a photograph with a long focus lens.

Concerning sharpness of detail a small negative has the advantage over a large plate. Even an enlargement from it, is superior in this respect to the direct negative of the same size, but the enlargement loses in the relative value of light and shade compared with the direct picture.

### **Reduction before Intensification.**

THE method for intensifying gelatine plates by first subjecting them to a reducing process seems to be gaining in popularity. We published some time ago, September, 1887, a plan of intensification adopted by Messrs. Cassebaum & Bartlett, in which the negative is subjected to a preliminary bath of per-chloride of iron and citric acid to reduce it, before application is made of gallic acid and silver to the film. It has worked admirably. Now Mr. Dunmore, in a communication to the London Photographic Club, comes forward with a similar process of preliminary reduction before intensification, of the efficiency of which we have no doubt, but must claim priority for our publication. We give the paper in full as read by Mr. Dunmore.

### On the Improvement of Over-exposed Negatives.

BY EDWARD DUNMORE.

*A Communication to the London Photographic Club.*

ACCORDING to promise, I will now tell you of the very simple plan I have adopted for rescuing weak, over-exposed negatives from the waste—a process so simple that I hesitated to say anything about it until I had made inquiries if this or any other plan had been successfully adopted for the purpose, or if, on the contrary, the greater portion of such defective negatives were considered irremediable failures and looked upon as worthless from a printer's point of view, at any rate. The only way of getting any passable result from a thin, over-exposed plate (if it was considered worth the trouble) was by making a transparency and copying that—a roundabout process, you must admit, if the original negative can be so altered and improved as to do away with the necessity of reproduction.

The process I am about to recommend is free from difficulty, being little else than already well-known processes somewhat differently applied; it is, in fact, so simple, that one is forcibly reminded of Columbus and the egg. Negatives which by this plan can be satisfactorily treated are over-exposed ones, of which a goodly number are, no doubt, in existence, but a plate chemically fogged, or one to which the light has had access before exposure, would probably not be amenable to this treatment; however I have not made any experiments to verify the opinion. Some improvement possibly might be made, but as to making a perfect negative of such, it is extremely doubtful, whereas in the case of over-exposure it is an undoubted panacea.

If an ordinary over-exposed negative

is intensified by any known method, it may be somewhat improved, but, at the same time, the deposit in the shadows will gain in strength, as well as the lights, and the result will be a very dense, slow-printing negative, and one from which perfect results are unlikely to be obtained, although somewhat better than the original before intensification. The effect of over-exposure is, we all know, to gradually obliterate the image until a point is reached when a reversal of it takes place, and the negative becomes a positive. It must be clearly understood I refer to the ordinary methods of development. In the development of a properly exposed plate, the reduction is first on the outer surface of the film, into which it gradually extends until the most reduced parts are visible at the back of the plate. If the development is continued for too long a time the portions much less acted upon by the light begin to show at the back also, and the resulting negative is too dense; this, however, depends in a measure on the thickness of the film. A proper development is one that gives sufficient density to the high lights without blocking up the shadows. The negative image in the gelatine film may be looked upon as a series of images in different strata overlying each other, the strongest lights penetrating lowest and deepest, and the deepest shadows passing scarcely beyond the surface, and sometimes not so much as appearing to affect it at all. It therefore seems that the thickest films, most rich in silver salt, should give the strongest image with ordinary development; on the contrary, with a thin, poor film it is difficult to get a good, rich printing image with clear shadows, and the chances of blurring and halation are greatly increased.

Given, then, an average good plate and over-exposure, my idea is to remove the outer layers sufficiently deep to leave clear glass in the deepest shadows, and



then intensify the remainder. The way of setting about it, and which I have found answers perfectly, is the following. Other plans doubtless might be adopted to effect the same results, but as the one I tried fully answered my expectations, I thought further search unnecessary. The appliances required are few and simple, being limited to a white dish and a lamp. A solution of five grains of hyposulphite of soda to the ounce of water in one receptacle, and a solution of the same strength of ferricyanide or red prussiate of potash in another, with plenty of clean water at hand, being ready, the negative to be operated on must first be carefully examined; and some part that we know should be nearly, if not quite, clear glass specially noted, as this will form the key to the reduction. The negative is now laid face uppermost in the white dish, the lamp being arranged to throw as good a light as possible on it. The hypo and ferricyanide solutions, being mixed together, are poured over it, the dish being gently rocked, and the process of reduction, which soon sets in, intently watched, and as soon as the portions noted at the beginning as the deepest shadows permit the white of the dish to shine through, remove the negative and immediately well wash it. It is best to stop a little short of the full effect desired, for the action will continue a little after the removal from the solutions. A bit of white paper pressed against the back of the negative will aid in deciding if the reduction has been carried far enough; if not, it may be redipped until it has. Now well wash. Soak for an hour in several changes of water, and dry if on a thorough examination, the reduction has been considered right. Intensification may be proceeded with, according to Dr. Monckhoven's plan, with bichloride of mercury and cyanide of silver modified in this manner. The bichloride of mer-

cury solution should be a cold, saturated solution at a temperature of  $60^{\circ}$ ; to one ounce of this add twenty grains of bromide of potassium. Let the negative, now very ghostlike, remain in this until it is quite whitened throughout; remove and well wash, and then place it in the cyanide of silver solution, of double the usual strength, until the white image is replaced by a black one. Wash well, and the process is completed. If it is found insufficiently intensified, this process may be repeated, washing and drying between the repetitions. You will see there is nothing new in the use of either Mr. Howard Farmer's reducing or Monckhoven's intensifying plans; the novelty rests in the application of them.

There are, undoubtedly, thousands of negatives thrown aside as useless on account of over-exposure, that will afford the useful and pleasant occupation of metamorphosing into good ones during the long evenings of the coming winter—it being essentially a process suited for artificial light—and the pleasure of seeing a negative given up as hopeless bloom into one without reproach may fairly divide the honors with making transparencies for microscopes or lantern slides, which are about the only photographic operations the majority of photographers can satisfactorily pursue during the gloomy winter season.

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#### **A Simple Method of Making Instantaneous Portraits and other Photographs at Night.**

BY HENRY G. PIFFARD.

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READ BEFORE THE SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

Portraiture by artificial light resolves itself into the employment of gas, kerosene, electricity, calcium or magnesium. With an abundance of either gas or kerosene, quite satisfactory portraits may be



made with an exposure of from one to three minutes, if care be taken in the arrangement of the lights, reflectors, etc. With the electric light, exposure may be very much shortened, and portraiture by this means has already been placed on a commercial basis.

The calcium light is also capable of being used for portraiture, but the apparatus employed is bulky, expensive and troublesome, and the results obtained are not sufficiently satisfactory to bring this method into use. Exposure required by the calcium light is longer than in ordinary daylight gallery work.

The intensely actinic light yielded by burning magnesium has been utilized experimentally, but not commercially, and has generally been obtained by the ignition of a small length of magnesium tape, either suspended free or fed from a specially constructed lamp. It usually requires an exposure of fifteen or twenty seconds. This method is unsatisfactory, owing to the fact that the magnesium tape is apt to break and the light go out before the exposure is completed. Powdered magnesium dropped from a funnel upon a burning lamp or other source of heat has not been found, in practice, to yield the results that were hoped for.

Quite recently Dr. H. W. Vogel has communicated the results obtained by him with the use of photographic powder prepared by Gädicke. By this means he obtained an instantaneous flash of extreme brilliancy and actinism, and capable of fully impressing the sensitive plate. In other words, he succeeded in making instantaneous portraits at night, a feat which had not been previously accomplished. The exact composition of Gädicke's powder is, we believe, unknown except to the inventor, but is supposed to be a mixture of magnesium, chlorate of potash and sulphide of antimony.

Commenting on this mixture, the *Brit-*

*ish Journal of Photography* of August 26th says: "The statement that it cannot be inflamed by pressure or percussion is difficult to believe, since most dangerous explosions have taken place with such a composition. Of course the materials must be ground separately and mixed gently, but even then, no matter how far the chlorate of potash may be diluted down, so to speak, with the other two substances, the statement that the mixture is safe against pressure and percussion is too serious, as well as too improbable, to be safely accepted on the authority of an anonymous newspaper paragraph."

The efficiency of the Gädicke light may be easily conceded, and is sufficiently attested by the eminent Dr. Vogel, and the only drawback to its use appears to be the danger of premature explosion of the powder, a danger that will be appreciated by all who are familiar with the behavior of mixtures containing chlorate of potash.

Experiment has already shown that the light given out by the burning of ten or fifteen grains of magnesium, is sufficient to fully expose a sensitive plate, and with the aid of a quick-acting portrait lens to yield a satisfactory negative so far as actinic effect is concerned.

In using magnesium tape, the ignition takes place gradually, and a time exposure is necessary. For instantaneous exposures, it is requisite that the entire quantity of magnesium be ignited simultaneously, so that the full actinism of the light is developed in an instant. This Gädicke has accomplished, but by means which appear to be somewhat hazardous.

The problem that remained, was to obtain a substance capable of instant combustion, and the heat from which would cause the simultaneous ignition of the magnesium, and which would be free from the dangers incident to the use of chlorate of potash. Such a substance is ordinary gunpowder.

If one part of gunpowder be mixed with four parts of magnesium powder and ignited in an open space, an extremely actinic light is instantly developed. This mixture is absolutely safe, as it cannot be ignited except by the application of fire, and will not explode by concussion.

Another simple method of accomplishing the same end is to take a small tuft of ordinary photographer's cotton, such as is used for making collodion, lay it on a metal plate, and strew over it a small quantity of magnesium powder. The cotton is then lighted with a match and the heat developed by its combustion ignites the magnesium, and we have an instantaneous blaze sufficiently actinic to effect the desired result, as I will presently demonstrate.

It is not for portraits only that the method here described is applicable. Excellent copies of photographs or other objects can be made, and even enlargements on bromide paper.

In practice I have found that seven or eight grains of cotton, with from ten to fifteen grains of magnesium, will produce sufficient light for a single portrait or a small group. For copying, lantern slides, or even bromide enlargements, the same quantity may be used.

The methods here described are not the only ones by which the extremely actinic light of magnesium may be safely developed, as I have made several negatives by the flash of a pistol, the weapon being loaded with a mixture of gunpowder and magnesium.

In comparison with other methods of artificial illumination adapted to portraiture, this panactinic light, if I may be permitted so to call it, is characterized by extreme softness, a feature impossible to obtain with either a single electric or calcium light, or with the magnesium tape; due to the fact that with these latter the light emanates from a comparatively

small point, while the magnesium-cotton light gives a large diffused blaze.

The prints which I exhibit this evening are from negatives which have been taken simply with a view to the demonstration of the actinic power of the light, and are to be judged from this and not from an artistic stand point. It remains for the professional photographer, skilled in the use of screens, reflectors, and other accessories, and familiar with the art of posing, to obtain the best results that this means of illumination is capable of producing.

In conclusion I must extend my thanks to my friends Mr. Edward Leaming and Dr. P. M. Bradley for the kind assistance they have given me while experimenting with this process.

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#### Pictures Received.

From Mr. Albert C. H. Krebs, of Fort Shaw, Montana, two photographs taken with a Rochester outfit; the one a landscape, the other a group of soldiers playing cards. The attitudes of the figures are well chosen and natural, and the action of the picture is good. The technical qualities are also excellent. We must congratulate Mr. Krebs on his success in securing so good results. The landscape is good photographically, but not of sufficient interest to please as a picture.

Mr. William Adcock, of Melton Mowbray, England, who so kindly furnished the charming study for our September number, has sent us another of his artistic pictures, a small one, entitled "Two's company, Three's none." Nothing can be more natural or tell the story with more grace. Indeed, all the work of Mr. Adcock which it has been our privilege to see, looks more like copies from paintings than actual poses from life. There is such freedom and simplicity in his work that he must either possess

delightful models or have the tact to mould them to his purpose: we are inclined to the latter opinion, since all his pictures have this charm, and we know that models are not of the most plastic material.

Mr. John Carbutt has favored us with a number of photographs, taken with the Magnesium and Gun-cotton Illumination. Mr. Carbutt is very successful in this new departure. His pictures, which represent groups in varied occupations, are excellent photographs, and the illumination is fine. One picture especially pleased us; it represented a number of children, some of a large growth, engaged in an All Hallow E'en project frolic. The expression on some of the figures is very amusing. All the pictures were taken upon Mr. Carbutt's excellent plates, and as the exposures were necessarily very short, the fine detail and strength of the photographs attest the plates' great rapidity and good qualities.

Mr. William H. Rau sends us a number of beautiful lantern slides of scenes of the recent Constitutional Centennial Celebration, and of the North Atlantic Squadron anchored in the Delaware river. It is impossible to desire anything more beautiful than the quality of these transparencies. There is a richness about them and a beauty of tone not surpassed even by the celebrated French slides of Levy and Laschenel. They are upon wet collodion plates and toned by a special process. We are glad to learn that Mr. Rau has been obliged to move to more commodious quarters, to accommodate his increased trade. His present location is 1324 Chestnut street, corner of Juniper street, where he is fitted up with all the requirements for producing the excellent work, examples of which he has had the kindness to send us. The list of slides we find enumerated in his catalogue em-

braces 5,000 subjects from all parts of the world.

The Eastman Dry Plate and Film Co., of Rochester, N. Y., sends us, by Mr. Bell-smith, a little pamphlet describing the latest improvements made by the company in film photography. Judging by the excellent sample, films have reached perfection. The "American Film" consists of a film of *insoluble* sensitive gelatine emulsion attached to a paper support by means of a layer of *soluble* plain gelatine. The paper serves as a temporary support during the operations of exposure, developing, fixing and washing. After which it is laid down on a prepared sheet of glass, the paper removed by warm water which dissolves the soluble gelatine layer and leaves the film on the glass, the paper is then replaced by a "skin" of gelatine and the whole stripped from the glass ready for printing. This process gives a clear, transparent, flexible negative, of superior printing quality, having all the advantages of glass, and neither its weight nor its fragility. A film negative is about one-twentieth the weight of an ordinary glass negative of the same size. The company has made great improvements in the Roll Holder, by which it is reduced in weight and size, in the number of parts, and what is also very important, in price. A sample Film Negative will be sent, postage paid, to any address in the U. S., on receipt of two 2-cent stamp. We assure you it is a little gem.

The desire of some of the members of the P. A. of A. to change the next place of meeting from Minneapolis to some other place nearer East, has not caused much stir in the photographic camp. It does not seem any more popular than the biennial proposition.

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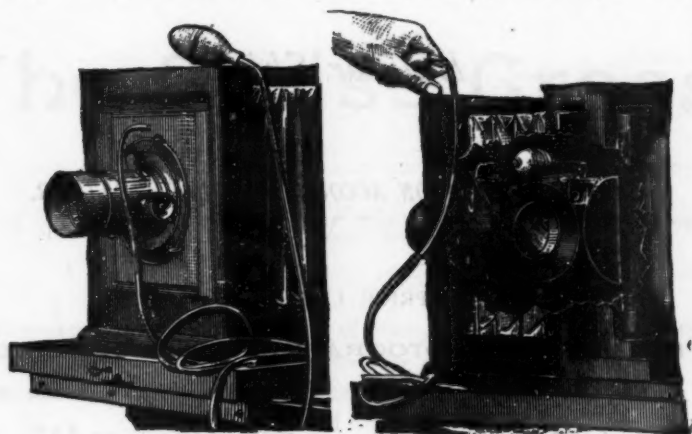
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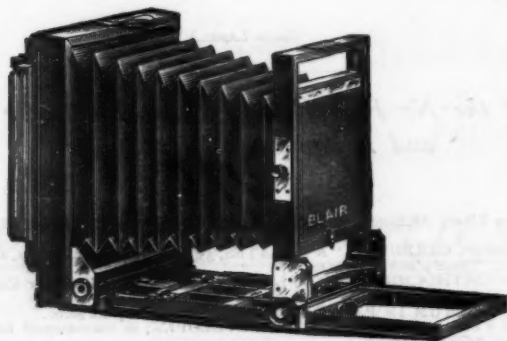
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